

Claims

1. A polymer dispersion, **characterized** in that it consists of the following components, based on the solids content of the product:

- 5 a) from 5 to 50%, preferably from 5 to 40% of starch with a degree of substitution (DS), relative to the cationic or anionic substituents, of from 0.01 to 1 and an intrinsic viscosity, when cationized and/or anionized, of > 1.0 dl/g,
- 10 b) from 50 to 95%, preferably from 60 to 95%, of a monomer mixture comprising at least one vinyl monomer,

the film forming temperature of the polymer, which comprises these components, being from -50 to 200°C , preferably from 0 to 100°C , more preferably from 0 to 70°C and most preferably from 10 to 50°C , and

- 15 c) water.
2. The polymer dispersion according to claim 1, **characterized** in that the degree of substitution of the starch is from 0.04 to 1.0 and the intrinsic viscosity is from 1.5 to 15 dl/g.
- 20 3. The polymer dispersion according to claim 1 or 2, **characterized** in that the film forming temperature of the polymer formed from the monomer mixture is from 10 to 50°C , preferably from 20 to 50°C .

25 4. The polymer dispersion according to any one of claims 1 to 3, **characterized** in that the monomer mixture consists of from 40 to 70% of acrylates and from 30 to 60% of styrene.

30 5. The polymer dispersion according to any one of claims 1 to 3, **characterized** in that it consists of

- 35 from 5 to 50% , preferably from 5 to 40% of starch,
from 0 to 19% of acrylonitrile,
from 10 to 60% of acrylates and
from 10 to 60% of styrene,

and water.

40 6. The polymer dispersion according to claim 5, **characterized** in that it consists of
from 15 to 40% , preferably from 15 to 35% of starch,
from 5 to 19% of acrylonitrile,
from 20 to 50% of acrylates and
from 20 to 40% of styrene,

and water.

45 7. The polymer dispersion according to claim 1, **characterized** in that it consists of

- 50 20% of starch with a degree of substitution of about 0.05 and an intrinsic viscosity of from 3 to 15 dl/g,
19% of acrylonitrile,

30% of acrylates and
31% of styrene,
and water.

- 5 8. A process for producing the polymer dispersion according to claim 1, characterized in that a monomer mixture comprising at least one vinyl monomer is copolymerized in an aqueous solution of a starch, and the polymer thus formed has a film forming temperature of from -50 to 200°C, preferably from 0 to 100°C, more preferably from 0 to 70°C and most preferably from
10 10 to 50°C.
9. The process according to claim 8, characterized in that the starch is dissolved in an aqueous alkaline solution at a temperature of over 60°C.
- 15 10. The process according to claim 8, characterized in that during the polymerization, the temperature is from 70 to 90°C and the pH is below 7.
11. The process according to claim 8, characterized in that an anionized and/or
20 a cationized starch is used.
12. The use of the polymer dispersion according to any one of the claims from 1 to 7 in paper manufacture.
- 25 13. The use of the polymer dispersion according to any one of the claims from 1 to 7 as a surface sizing additive for paper.
14. The use of the polymer dispersion according to any one of the claims from 1 to 7 as a wet- and dry-strengthener for paper which is added to the wet end
30 of the paper machine.
15. The use of the polymer dispersion according to any one of the claims from 1 to 7 as a pulp size.